13. REMARKABLE GROWTH OF FISH IN SANDAIMEDU DEMONSTRATION TANK (NORTH ARCOT DISTRICT, MADRAS STATE), WITH A NOTE ON ITS ECOLOGY

The major Indian carps, *Catla catla*, *Labeo rohita*, and *Cirrhina mrigala*, are well known for their rapid growth. Chacko & Ganapati (1950) recorded a weight-increase in catla of 5½ lb. (2·5 kg.) in 5 months in a pond at Kancheepuram. This fish is reported to have grown 7-9 lb. (3·2-4·0 kg.) in a year in polluted water (Chacko 1948, Chacko & Kurian 1948). Mrigal grew 3-4 lb. (1·4-1·8 kg.) in a year in certain ponds in Madras (Chacko & Ganapati 1951). In this context it is interesting to record the remarkable growth of rohu in Sandaimedu Tank in Chengam Town in North Arcot District, an isolated, square-shaped, perenial tank, with a mean depth of 1·5 m., a maximum depth of 4 m., and an area of 0·4 acre (0·16 hectare). The tank is used for washing clothes and bathing cattle, and slight pollution occurs by domestic drainage from half a dozen huts.

Early in 1960 the Madras Fisheries Department took over the tank for the demonstration of fish culture and stocked it with catla, rohu, mrigal, tilapia, chanos, and mirror carp. On 3 February 1960, 7 rohu and 7 mrigal of sizes 12-15 cm. (weighing 50 gr. or less) were introduced and fourteen months later, on 5 April 1961, a rohu weighing 11·25 lb. (5·2 kg.) was taken from the tank. Other species have shown good growth in this tank, though not as rapid as rohu. Mrigal grew to 5·5 lb. (2·5 kg.) in two years. Milk fish (*Chanos chanos*) grew to 1 lb. (0·45 kg.) in one year and 1·6 lb. (0·73 kg.) in 1½ years, and two of them reached 3·3 lb. (1·5 kg.) in 21 months. This growth is comparable to that recorded by Chidambaram & Unni (1946). The average weight of chanos caught from this tank is 400-500 gr. Mirror carp (*Cyprinus carpio*) grew to 1 lb. (0·45 kg.) in 8 months, 1·5 lb. (0·73 kg.) in 9 months, and 1·75 to 2·0 lb. (0·65 to 0·9 kg.) in 1 year, which is better than the growth recorded by Alikunhi & Ranganathan (1946) for this fish. Catla grew to 6·6 lb. (3·0 kg.) in 15 months, but only a few had reached 4·4 lb. (2·0 kg.) at the expiry of 7 months. Fish production in this tank works out at 1300 lb. (590 kg.) per acre in 1961 and 1076 lb. (490 kg.) in 1962-63, a fairly good yield for unfertilized water.

The ecological features of this productive tank are given below:

Chemical quality

Free carbon dioxide 0·0-1·76 p.p.m., Carbonate 0·0-26·8 p.p.m., Bicarbonate 81·6-183·0 p.p.m., Chloride 60·0 p.p.m., pH 7·7-9·2,

dissolved Oxygen 2·1-11·0 mg/l, hardness 87-96·0 p.p.m. (as $CaCO_3$). Phosphate 0·0-0·08 p.p.m., Silicate 9·5 p.p.m., Calcium 24·0 p.p.m. and electrolytic conductivity 420-470 μ mho.

Plankton

The secchi disc visibility was low, 15-20 cm. only, owing to plankton blooms. The net plankton 30-40 μl/L, but the plankton volume was greater when it was allowed to settle with Lugol's iodine—600 μl/L. The dominant genera were, *Microcystis, Oscillatoria, Euglena, Trachelomonas, Ulothrix, Staurastrum, Coelastrum, Chlorococcum, Scenedesmus, Nodularia, Melosira, Navicula, Cyclotella, Merismopedia,* and *Oocystis* among phyto-plankton, and *Daphnia, Cyclops, Brachionus, Eubranchipus, Nauplius* larvae, and Anureae among zoo-plankton. The zoo-plankton was as abundant as in cowdung-manured nursery ponds. Abundant bottom fauna of gastropods, molluscs, and chironomid larvae were also present. *Marsilea quadrifoliata* was noted on the surface of the water. The soil had a pH of 7.8 with an available Phosphorus content of 1·05 p.p.m., Calcium content of 40·0 p.p.m., and Ammonia content of 2·0 p.p.m. The high alkalinity due to Bicarbonates, the alkaline pH, the medium hardness, presence of nutrients such as Phosphate and Silicate, Calcium, etc., and the high dissolved salts (as indicated by the electrolytic conductivity) indicate the favourable conditions of the water. This is reflected in the good plankton production which in turn has led to good growth of fishes.

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